Highway Economic Analysis Tool (HEAT)
Integrated GIS-Based Highway Economic Analysis Tool

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MDT serving you with pride
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HEAT Goals

- How much will specific transportation investments benefit each industry
- Provide DOTs and MPOs with a comprehensive analytical toolbox for in-house use to evaluate economic development and benefit/cost
- Apply the toolbox to quantify the economic impacts of transportation improvement scenarios
  - Individual projects and corridors
  - Statewide planning and program

Applications of HEAT

- Long-Range Policy Plan Updates
  - Corridor-level analyses
- Investment Analysis
  - Investment strategy
  - Packages of reconstruction work that add capacity
- District Nomination Process
  - Screen and rank projects
- Five-Year Tentative Construction Program (TCP) Development
- Project Implementation for EIS evaluations

HEAT
Project's Evolving Objectives

- Quantify the economic impacts of transportation improvement scenarios
- Identify which transportation investments will benefit specific industries
- Provide MDT with a comprehensive, robust, and easy-to-use tool for benefit-cost analysis of transportation improvements
- Integrate HEAT into MDT's Planning and Programming Process (P3), environmental clearance, and economic development

HEAT Strengths and Weaknesses

- Provides transportation agencies with analysis tool that can be used to quantify economic benefits of any highway improvement
- Can be used to analyze economic impacts of alternatives during project development
- Developed in format that will allow staff to update and use tool in future
- Subject to misuse and misunderstanding if used out of context
- Does not predict potential shocks such as exchange rates, rail service changes, international trade patterns

Visitor Model
Effect Of Change In Travel Time and Distances

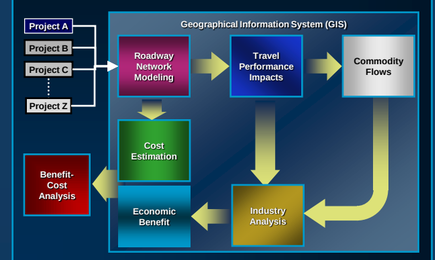
Capture four types of new or increased visitor spending generated by highway improvements –

1. Increase in pass-through traffic by out-of-state residents whose final destination is not MT
2. Increase in number of "day trips" by residents of border states, e.g., North Dakota
3. Increase in number of in-state "day trips" by Montana residents (and corresponding decline in day trips to border states, e.g., North Dakota)
4. Increase in amount of time (and money) spent by Montana travelers whose final destination is outside of Montana

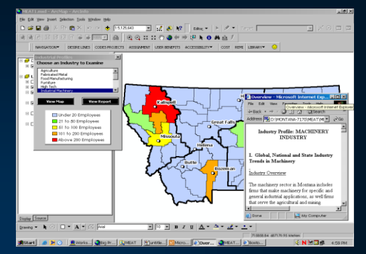
GIS Platform

- Increasingly accessible software platform
- Data integration and manage the model components
- Allow user flexible access to related supporting information
  - Commodity flow mapping capability (desire lines)
  - Library tool for industry-by-industry performance
  - Documentation and User Guide
- Visual Basic customization
- Ability to easily interface with other software

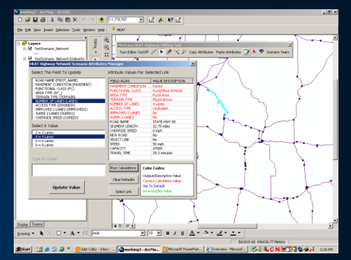
HEAT Structure
Seven Linked Analytical Modules



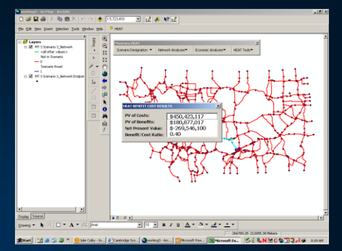
Industry Profiles
Library Tool Accesses Industry Trends



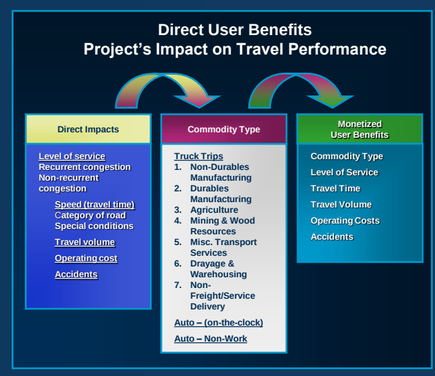
Roadway Network Modeling



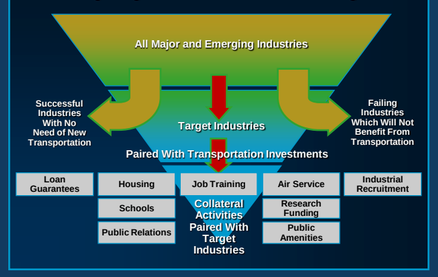
Benefit-Cost Analysis



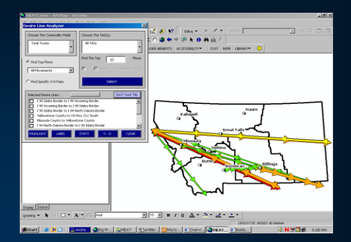
Direct User Benefits
Project's Impact on Travel Performance



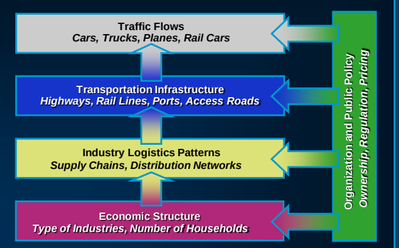
Targeting Industries - Industrial Triage



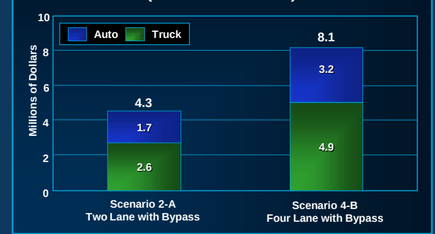
Top 10 Inter-county Flows
All Commodities in Millions of Tons (2001)



Integrating Economic Policy to Transportation



MT 3 Scenarios – Billings to Great Falls
Total Annual Direct User Benefits
(Millions of Dollars)



Economic Impacts
Broken Out by Region, Industry, and Mode